

A reinforced composite ionic conductive polymer membrane, and a fuel cell with improved efficiency that includes the reinforced composite ionic conductive polymer membrane are provided. The reinforced composite ionic conductive polymer membrane includes a porous support, an ion-exchange polymer that impregnates the porous support; and a reinforcing agent that impregnates the porous support, the reinforcing agent including a moisture retentive material and/or a catalyst for facilitating oxidation of hydrogen.